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EXAMINER				
MASUR, PAUL H				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/583,754

**Applicant(s)**

ZHUYAN, ZHAO

**Examiner**

Paul Masur

**Art Unit**

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 June 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) 14-16 and 26 is/are allowed.  
6) ☒ Claim(s) 1-5, 11-13 and 17-22 is/are rejected.  
7) ☒ Claim(s) 6-10 and 23-25 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 21 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 06/21/2006  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

- 1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:**

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 2. Claims 1-4, 12, & 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Odenwalder et al. (US PG Pub 2002/0159410) in view of Walton et al. (US PG Pub 2002/0177447).**
- 3. As per claim 1,** Odenwalder et al. teaches a method for decreasing a transmission delay in a multi-sub-channel data transmission of physical layer frames using hybrid automated repeat request with acknowledgement signaling, wherein said method comprises... determining, if there is a physical layer frame of another sub-channel with pending acknowledgement [Odenwalder, paragraph 0067, "no ACK or NAK is detected by the receiver subsystem the base station", The receiver determines of ACKs of NAKs were received.], selecting said physical layer frame with pending acknowledgement [Odenwalder, paragraph 0067, "The remote station retains the old data subpacket in a buffer until a timer expires", The physical frame is stored in a buffer for a set period of time.],...and transmitting said selected frame [Odenwalder, paragraph 0067, "reschedules the transmission of the old data payload", The pending frame is resent if no ACK or NAK are received.].

Odenwalder et al. does not teach determining, if no physical layer frame needs to be transmitted in a provided sub-channel...if no physical layer frame needs to be transmitted in the provided sub-channel...in said provided sub-channel.

However, Walton et al. teaches determining, if no physical layer frame needs to be transmitted in a provided sub- channel [Walton, paragraph 0007, "The available resources for uplink transmissions from the terminals to the base station are limited. Typically, only a fraction of the terminals may be scheduled for transmission on the available spatial subchannels", If resources are limited, then each sub-channel is examined for available bandwidth.]....if no physical layer frame needs to be transmitted in the provided sub-channel [Walton, paragraph 0007, "Efficient use of the available uplink resources (e.g., higher throughput) may be achieved if the available spatial subchannels are effectively allocated such that data is transmitted on these subchannels by a "proper" set of terminals in the MIMO system", If no other frames need to be transmitted, the pending frame would be selected to efficiently use the terminals.]....in said provided sub-channel [Walton, paragraph 0007, "the available spatial subchannels"].

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Walton et al. into Odenwalder et al., since Odenwalder et al. suggests retransmitting a frame from the buffer if an ACK/NAK is not received, and Walton et al. suggests the beneficial use of transmitting on another sub channel if it is available such as to use available bandwidth [Walton, paragraph 0007] in the analogous art of network data transmissions.

4. **As per claim 2**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 1. Odenwalder et al. also teaches further comprising:

determining, if there are physical layer frames with pending acknowledgement that have been previously selected [Odenwalder, paragraph 0067, "no ACK or NAK is detected by the receiver subsystem the base station", The receiver determines of ACKs of NAKs were received.], and selecting another physical layer frame with pending acknowledgement that has not been previously selected [Odenwalder, paragraph 0067, "The remote station retains the old data subpacket in a buffer until a timer expires", The physical frame is stored in a buffer for a set period of time.].

5. **As per claim 3**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 1. Odenwalder et al. also teaches wherein said physical layer frame with pending acknowledgement, is selected, wherein said pending acknowledgement is pending for a longer time period than the acknowledgement any of the other frames [Odenwalder, paragraph 0067, "The remote station retains the old data subpacket in a buffer until a timer expires", The inclusion of a buffer timer means that some frames are inherently pending longer or shorter than the rest.].

6. **As per claim 4**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 1. Odenwalder et al. also teaches wherein said physical layer frame with pending acknowledgement is selected, wherein said pending acknowledgement is pending for a shorter time period than the acknowledgement of any of the other frames [Odenwalder, paragraph 0067, "The remote station retains the old data subpacket in a

buffer until a timer expires", The inclusion of a buffer timer means that some frames are inherently pending longer or shorter than the rest.].

7. **As per claim 12**, Odenwalder et al. in view of Walton et al. teaches a computer program product comprising program code means stored on a computer readable medium for carrying out the method of claim 1 when said program product is run on a computer or network device [Odenwalder, paragraph 0056, "a scheduling element in a base station (not shown), wherein the scheduling element comprises at least a control processor and a memory element", The base station is a network device.].

8. **As per claim 17**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 2. Odenwalder et al. also teaches wherein said physical layer frame with pending acknowledgement is selected, wherein said pending acknowledgement is pending for a longer time period than the acknowledgement any of the other frames [Odenwalder, paragraph 0067, "The remote station retains the old data subpacket in a buffer until a timer expires", The inclusion of a buffer timer means that some frames are inherently pending longer or shorter than the rest.].

9. **As per claim 18**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 2. Odenwalder et al. also teaches wherein said physical layer frame with pending acknowledgement is selected, wherein said pending acknowledgement is pending for a shorter time period than the acknowledgement of any of the other frames [Odenwalder, paragraph 0067, "The remote station retains the old data subpacket in a buffer until a timer expires", The inclusion of a buffer timer means that some frames are inherently pending longer or shorter than the rest.].

10. **As per claim 19**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 3. Odenwalder et al. also teaches wherein said physical layer frame with pending acknowledgement is selected, wherein said pending acknowledgement is pending for a shorter time period than the acknowledgement of any of the other frames [Odenwalder, paragraph 0067, "The remote station retains the old data subpacket in a buffer until a timer expires", The inclusion of a buffer timer means that some frames are inherently pending longer or shorter than the rest.].

11. **Claims 5 & 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Odenwalder et al. (US PG Pub 2002/0159410) in view of Walton et al. (US PG Pub 2002/0177447) and Cadd et al. (US Patent No. 6,353,617).**

12. **As per claim 5**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 1. Odenwalder et al. does not teach wherein said physical layer frame with pending acknowledgement, is randomly selected.

However, Cadd et al. teaches wherein said physical layer frame with pending acknowledgement, is randomly selected [Cadd, fig. 4, element 232, column 7, lines 64-67, "If one or more frames remain, then the radio unit waits for the next frame at 232 and randomly selects one of the remaining frames at 216, after which the process continues"].

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Cadd et al. into Odenwalder et al., since Odenwalder et al. suggests retransmitting a frame from the buffer if an ACK/NAK is not received, and Cadd et al. suggests the beneficial use of randomly selecting

frames to transmit such as to continue the transmission process [Cadd, fig. 4, element 232, column 7, lines 64-67] in the analogous art of scheduling transmissions.

13. **As per claim 20**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 2. Odenwalder et al. does not teach wherein said physical layer frame with pending acknowledgement, is randomly selected.

However, Cadd et al. teaches wherein said physical layer frame with pending acknowledgement, is randomly selected [Cadd, fig. 4, element 232, column 7, lines 64-67, "If one or more frames remain, then the radio unit waits for the next frame at 232 and randomly selects one of the remaining frames at 216, after which the process continues"].

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Cadd et al. into Odenwalder et al., since Odenwalder et al. suggests retransmitting a frame from the buffer if an ACK/NAK is not received, and Cadd et al. suggests the beneficial use of randomly selecting frames to transmit such as to continue the transmission process [Cadd, fig. 4, element 232, column 7, lines 64-67] in the analogous art of scheduling transmissions.

14. **As per claim 21**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 3. Odenwalder et al. does not teach wherein said physical layer frame with pending acknowledgement, is randomly selected.

However, Cadd et al. teaches wherein said physical layer frame with pending acknowledgement, is randomly selected [Cadd, fig. 4, element 232, column 7, lines 64-67, "If one or more frames remain, then the radio unit waits for the next frame at 232

and randomly selects one of the remaining frames at 216, after which the process continues”].

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Cadd et al. into Odenwalder et al., since Odenwalder et al. suggests retransmitting a frame from the buffer if an ACK/NAK is not received, and Cadd et al. suggests the beneficial use of randomly selecting frames to transmit such as to continue the transmission process [Cadd, fig. 4, element 232, column 7, lines 64-67] in the analogous art of scheduling transmissions.

15. **As per claim 22**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 4. Odenwalder et al. does not teach wherein said physical layer frame with pending acknowledgement, is randomly selected.

However, Cadd et al. teaches wherein said physical layer frame with pending acknowledgement, is randomly selected [Cadd, fig. 4, element 232, column 7, lines 64-67, “If one or more frames remain, then the radio unit waits for the next frame at 232 and randomly selects one of the remaining frames at 216, after which the process continues”].

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Cadd et al. into Odenwalder et al., since Odenwalder et al. suggests retransmitting a frame from the buffer if an ACK/NAK is not received, and Cadd et al. suggests the beneficial use of randomly selecting frames to transmit such as to continue the transmission process [Cadd, fig. 4, element 232, column 7, lines 64-67] in the analogous art of scheduling transmissions.

**16. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Odenwalder et al. (US PG Pub 2002/0159410) in view of Walton et al. (US PG Pub 2002/0177447) and Akella et al. (US PG Pub 2003/0202492).**

17. **As per claim 11**, Odenwalder et al. in view of Walton et al. teaches a method according to claim 1. Odenwalder et al. does not teach wherein said multi-sub-channel data transmission is an uplink of a dedicated transport channel in universal terrestrial radio access.

However, Akella et al. teaches wherein said multi-sub-channel data transmission is an uplink of a dedicated transport channel in universal terrestrial radio access [Akella, paragraph 0030, "According to the CDMA2000 and UMTS technical standards, data transmitted on the forward links is transmitted using Quadrature-Phase Shift Keying (QPSK) which involves the data on a single channel being spread across both the In-phase (I) and the Quadrature-phase (Q) subchannels", Data is transmitted on multiple subchannels on the uplink.].

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Akella et al. into Odenwalder et al., since Odenwalder et al. suggests retransmitting a frame from the buffer if an ACK/NAK is not received, and Akella et al. suggests the beneficial use of UMTS such as to transmit frames [Akella, paragraph 0030] in the analogous art of wireless transmissions.

**18. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Odenwalder et al. (US PG Pub 2002/0159410) in view of Walton et al. (US PG Pub 2002/0177447) and Kenagy et al. (US PG Pub 2004/0110504).**

19. **As per claim 13**, Odenwalder et al. in view of Walton et al. teaches carrying out the method of claim 1. Odenwalder et al. does not teach a computer program product comprising program code, downloadable from a server...when said program product is run on a computer or network device.

However, Kenagy et al. teaches a computer program product comprising program code, downloadable from a server...when said program product is run on a computer or network device [Kenagy, paragraph 0008, "The system of interfacing includes one or more wireless devices in selective communication with the wireless network with each wireless device has attributes thereof and a computer platform for selectively executing computer programs thereupon, and each wireless device further has an end-user who can selectively access the computer platform, and one or more application download servers in selective communication to the wireless network with each application download server having at least one resident application and selectively downloading applications to the wireless device(s)", Each base station can download and execute a program from the server.].

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Kenagy et al. into Odenwalder et al., since Odenwalder et al. suggests retransmitting a frame from the buffer if an ACK/NAK is not received within a network, and Kenagy et al. suggests the beneficial use of downloading a program from a network server such as to perform network operations [Kenagy, paragraph 0008] in the analogous art of network communications.

***Allowable Subject Matter***

- 20. Claims 6-10 & 23-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**
- 21. Claims 14-16 & 26 are allowed.**

***Conclusion***

- 22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Masur whose telephone number is (571) 270-7297. The examiner can normally be reached on Monday through Friday from 7:00AM to 4:30PM (Eastern Time).**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/P. M./  
Examiner, Art Unit 2416

/Ricky Ngo/  
Supervisory Patent Examiner, Art  
Unit 2416